Office Action Summary	Application No.	Applicant(s)	
	10/626,165	CAVE ET AL.	
	Examiner	Art Unit	
	DUNG LAM	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ___.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1, 4, 6, 8-9, 12-13, 16, 20, 23, 26-28, 29, 31, 35-36, 39, 41, 43, 45, 48-49, 51 and 55-56** rejected under 35 U.S.C. 103(a) as being unpatentable by Watanabe **et al.** (US Patent No. 6834192, hereinafter **Watanabe**) in view of Jollota et al. (US 2004/0142691, hereinafter **Jollota**) further in view of **Velazquez et al.** (US Patent No. 6,593,880, hereinafter **Velazquez**).

1. Regarding **claim 1**, **Watanabe** teaches a in a radio network having a plurality of base stations, each providing duplex wireless communication services for mobile units in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations, and an interface connected to the base stations, a method for establishing wireless communication comprising (Abstract and Fig. 1):

- transmitting an omnidirectional sounding pulse (inquiry messge) from the mobile unit located in a geographic coverage area of at least one of the base stations (C6 L48-52);
- communicating information related to the detected sounding pulse to the interface by each base station detecting the sounding pulse (C6 L50-55);

- selecting the second base station from the base stations that detected the sounding pulse based on the communicated information (C8 L9-51); and directing a communication link from the selected base station to the mobile unit to establish wireless communication. (C8 L49-51).

However, Watanabe does not explicitly teach a plurality of base stations in the selection step and the transmitting step. However, it is known in the art of Bluetooth a mobile device often sends out an inquiry signal and receives responses back from multiple devices or access points and one of the device/access point/BS is selected for communication.

In an analogous art, **Jollota** teaches that in response to the transmission of an inquiry signal (omnidirectional) from the mobile ([0021]), multiple BSUs communicate their Received_MU commands to an interface PSC ([0022]). The PSC then compares these commands/responses and selects an optimal BSU ([0025], fig. 1 and 2).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Watanabe's teaching of handoff and Jollota's teaching of selecting one among the many BS/BSUs that respond to the mobile's inquiry because this combination would allow the MS to have more choices in selecting the best BS to handover to.

However, **Watanabe and Jollota** do not explicitly teach that the communication link is a beam. In an analogous art, **Velazquez** teaches a handoff method in which the base station uses beamforming for communication link (Col. 6, ln. 65 - Col. 7 ln 15, Col. 8, ln 25-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe and Jollota's** teaching of the handover method in the UMTS system and Velazquez's teaching of using beam forming to reduce the system's interference as suggested by Velazquez (see Col. 5 Ln. 65- col. 7 Ln 5).

Regarding **claim 23, Watanabe** teaches a communication network for wireless communication with mobile units comprising (Abstract and Figures 1 and 8): a plurality of base stations (Abstract, Fig. 1), each providing duplex wireless communication services in a geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations;

- at least one base station interface connected to the base stations (controller 10, Figs. 1, C7 L47-53);
- each base station configured to detect sounding pulses emitted from mobile units in order to establishment wireless communication with such mobile units (C6 L50-55);
- each base station configured to communicate, information related to a detected sounding pulse from a mobile unit to a selected interface (C6 L50-55);
- each interface, when selected, configured to select a base station for wireless communication with a mobile unit that transmitted a sounding pulse based on the information communicated from each base station that detected the sounding pulse emitted from that mobile unit (C8 L9-51);
- and each base station configured to direct a communication link when selected to a respective mobile unit to establish wireless communication (C8 L49-51).

However, Watanabe does not explicitly teach a plurality of base stations in the selection step and the transmitting step. However, it is known in the art of Bluetooth a mobile device often sends out an inquiry signal and receives responses back from multiple devices or access points and one of the device/access point/BS is selected for communication.

In an analogous art, **Jollota** teaches that in response to the transmission of an inquiry signal (omnidirectional) from the mobile ([0021]), multiple BSUs communicate their Received_MU commands to an interface PSC ([0022]). The PSC then compares these commands/responses and selects an optimal BSU ([0025], fig. 1 and 2).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Watanabe's teaching of handoff and Jollota's teaching of selecting one among the many BS/BSUs that respond to the mobile's inquiry because this combination would allow the MS to have more choices in selecting the best BS to handover to.

Although, **Watanabe** does not explicitly teach that the wireless communication link is a beam. In an analogous art, **Velazquez** teaches a handoff method in which the base station uses beamforming for communication link (Col. 6, In. 65 - Col. 7 In 15, Col. 8, In 25-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe** teaching of the handover method and **Velazquez's** teaching of using beam forming to establish the communication link and at the same time reduce the system's interference as suggested by Velazquez (see Col. 5 L65- col. 7 L5).

Regarding **claims 13, 27, 28, 36 and 56**, they are subsets of claims 1 and 9. Therefore, they are rejected for the same reasons as claim 1 and 9.

Regarding **claim 35, 48 and 55**, they are similar to the scope of claims 1 and 23. Therefore, they are rejected for the same reasons as claim 1 and 23.

Regarding **claim 4**, **Watanabe, Jollota and Velazquez's** teach all the limitations of the method of claim **3** but is not explicit that Node B is configured to operate its antenna to form a communication beam that carries common channels that encompasses the relative location of a plurality of UEs so that the formed beam provides common channel service to a plurality of UEs. Nonetheless, it is a practical design system to service a plurality of UEs rather than a single one to increase capacity of the system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to service multiple UEs to maximize system capacity.

Regarding **claims 6, 12, 26, 39 and 41**, they are similar to the scope of claim 4. Therefore, they are rejected for the same reasons as claim 4.

Regarding claim **8, Watanabe** and Velazquez teach all the limitations of the method of claim 1. **Watanabe** further teaches the mobile units are each configured to monitor the power level of a directed communication beam from a base station that is received by the mobile unit and to transmit an omnidirectional sounding pulse if the monitored power level falls below a predefined level (C6 L32-45).

Regarding **claim 9**, **Watanabe, Jollota and Velazquez** teach the method of claim 1, wherein: **Watanabe** further teaches the transmitting of an omnidirectional sounding pulse is from each of a plurality of mobile units (C6 L48-52); the communicating information includes communicating information related to each distinguishable

sounding pulse from each respective mobile unit detected by a base station to a respective selecting interface for base station selection with the respective mobile unit (C6 L50-55); the base station selection includes selecting a base station by each respective selecting interface for each respective mobile unit communication based on the information related to the distinguishable detected sounding pulse of the respective mobile unit from each base station that detected a distinguishable sounding pulse of the respective mobile unit (C8 L49-51); and for each respective mobile unit for which at least one base station received a distinguishable sounding pulse, directing a communication beam from the respective selected base station to the mobile unit to establish wireless communication (Velazquez Col. 6, In. 65 - Col. 7 In 15, Col. 8, In 25-40).

Regarding **claims 29, 43 and 49**, they are similar to the scope of claim 8. Therefore, they are rejected for the same reasons as claim 8.

Regarding **claim 16**, **Watanabe and Velazquez** teach all the limitations of the method of claim **1, Velazquez** teaches the mobile unit is equipped with a global positioning system (GPS) and transmitting of mobile unit location information associated with the sounding pulse transmitted by the mobile unit and/or includes transmitting of identification information associated with the sounding pulse transmitted the mobile unit (C8 L20-37). Therefore it would have been obvious for one of ordinary skill in the art at the time of the invention for to add Valazquez's GPS capability to Watanabe's handoff

method to speed up the location positioning of the handset and thus to speed up a faster handoff process.

Regarding **claims 20, 31, 45 and 51**, they are similar to the scope of claims 16. Therefore, they are rejected for the same reasons as claim 16.

Claim **2-3, 5, 10-11, 24-25, 27, 37-38 and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe, Jollota** and **Velazquez** in view of Bark **et al.** (US Patent No. 6445917, hereinafter **Bark**).

Regarding **claim 2 and 10**, **Watanabe, Jollota** and **Velazquez** teach all the limitations of the method of claim **1** but do not explicit teach that the radio network is a UMTS Terrestrial Radio Access Network (UTRAN), each base station is a Node B, the interface is a Radio Network Controller (RNC) and the mobile unit is a mobile User Equipment (UE); In an analogous art, **Bark** teaches a UMTS Terrestrial Radio Access Network (UTRAN) (**24**, see Figure 1A), each base station is a Node B (**28**), the interface is a Radio Network Controller (RNC) **26** and the mobile unit is a mobile User Equipment (3G terminology); the communicating information is between Node Bs and the RNC via an Iub or combination Iub/Iur interface (Col. 5, lines 44-45, and 3G standards); the second base station selection is performed by the RNC by selecting a second Node B (col. 8, lines 50-55); and the UE's communication continued via the second Node B is via a Uu interface (inherent). UMTS is a system used in the 3G which is widely used. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the handover method to also establish this handover method in the UMTS system to keep the network system up-to-date with the current technology.

Regarding claims **24 and 27**, they have corresponding limitations to claim 2. Therefore, they are rejected for the same reasons as claim 2.

Regarding **claim 3**, **Watanabe, Jollota, Velazquez and Bark** teach all the limitations of the method of claim **2**. **Velazquez** further teaches a step of determining a relative location of the UE with respect to the beamforming antenna of the selected second Node B based on information related to the detected sounding pulse whereby the continuing of the UE's communication via the second Node B includes operating the selected Node B's antenna to form a communication beam for at least one dedicated channel covering a selected portion of the coverage area serviced by the second Node B that encompasses the determined relative location of the UE (Col. 7, ln 25-68, Col. 8, ln 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe, Jollota, Velazquez and Bark**'s teaching of the handover method in the UMTS system and Velazquez's teaching of locating the UE and directing the beam toward the UE to reduce the system's interference.

Regarding claims **5, 11, 25, 38 and 40**, they are similar to the scope of claim 3. Therefore, they are rejected for the same reasons as claim 3.

Claims 7, 14-15, 17-19, 21-22, 30, 32-34, 42-43, 46-47, 50 and 52 - 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe, Jollota, Velazquez** in view of **Anderson et al.** (US Patent No. 5396541).

Regarding **claim 7**, **Watanabe, Jollota, and Velazquez** teach all the limitations of the method of claim **1**. Watanabe does not explicitly teach that the method is restarted if the mobile unit does not receive a directed communication beam from a base station within a predefined time period from its transmitting of an omni-directional sounding pulse. However, **Anderson** teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 50-15). In addition, it is also well known in the field of communications that after a failed transmission, one of ordinary skill in the art may use back-off algorithm to resend the signal in a predefined period of time. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine **Watanabe**'s handoff method and **Anderson**'s teaching of a restarting the process of sending the signal (if the mobile is far away from the base station) at a predefined period to increase the chance of a successful handoff.

Regarding **claims 14** and **42**, they are similar to the scope of claim 7. Therefore, they are rejected for the same reasons as claim 7.

Regarding **claim 15**, **Watanabe, Jollota, and Velazquez** teach all the limitations of the method of claim 83 but silent on a mobile ID. In an analogous art, **Anderson** further teaches that the mobile unit is configured to transmit an

omnidirectional sounding pulse that includes mobile unit identification information (the mobile responds to a poll message with its identification, Col. 12, lines 52-58). Therefore, one skill in the art would combine Watanabe and Velazquez's teaching of handoff with Anderson's teaching of the mobile identification to make it easier to identify where the signal is coming from and thus facilitate the handoff process.

Regarding **claims 19, 32 and 53**, they are similar to the scope of claim 15. Therefore they are rejected for the same reasons as claim 15.

Regarding **claim 17 and 52**, **Watanabe, Jollota** and **Velazquez** teach all the limitations of the method of claim **9/48** but not explicitly teach that the transmitting of an omnidirectional sounding pulse includes transmitting a subsequent sounding pulse of increased power by the mobile unit if handover does not occur within a predefined time period from its transmitting of an omnidirectional sounding pulse. However, Anderson teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 50-15). In addition, it is also well known in the field of communications that after a failed transmission, one of ordinary skill in the art may use back-off algorithm to resend the signal in a predefined period of time. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine **Watanabe, Jollota** and **Velazquez**'s handoff method and **Anderson**'s teaching of a increasing the signal power (if the mobile is far away from the base station) at a predefined period to increase the chance of a successful handoff.

Regarding **claim 18**, **Watanabe, Jollota and Velazquez** all the limitations of the method of claim **9** but fail to expressly teach that the transmitting of an omnidirectional sounding pulse includes transmitting a series of omnidirectional sounding pulses of increasing power from the mobile unit. However, Anderson teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 50-15). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine **Watanabe, Jollota and Velazquez**'s handoff method and **Anderson**'s teaching of retransmitting the signal with increasing power (assuming the mobile is far away from the base station) to increase the chance of a successful handoff.

Regarding claims **22, 34, 47 and 54**, they are similar to the scope of claim 18. Therefore they are rejected for the same reasons as claim 18.

Regarding claims **21, 30, 33, 43, 46 and 50**, they are similar to the scope of claim 18. Therefore they are rejected for the same reasons as claim 17.

Response to Arguments

Applicant's arguments with respect to claims 1-56 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DUNG LAM whose telephone number is (571) 272-6497. The examiner can normally be reached on M - F 9 - 5:30 pm, Every Other Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Harper can be reached on (571) 272-7605. The fax phone number for the organization where this application or proceeding is assigned is (571) 272-6497.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/D. L./
Examiner, Art Unit 2617